

**ABSTRACT OF THE DISCLOSURE**

[0024] A phase change material comprising a mixture of water and deuterium oxide is described, wherein the mole fraction of deuterium oxide is selected so that the mixture has a selected phase change temperature within a range between 0°C and 4°C. The mixture is placed in a container and used for passive storage and transport of biomaterials and other temperature sensitive materials. Gels, nucleating agents, freezing point depression materials and colorants may be added to enhance the characteristics of the mixture.